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City of Boston
The Environment Department

Raymond L. Flynn
Mayor

Lorraine M. Downey
Director

Boston City Hall/Room 805
Boston, Massachusetts 02201
617/725-4416 or 725-3850

October 22, 1991

Dear Library Patron:

The City of Boston is a participant in the National Flood Insurance Community Rating Service Program. Through flood hazard research and the implementation of community sponsored projects, the City of Boston Environment Department hopes to reduce current flood insurance premiums paid by Boston homeowners. As part of our desire to keep residents informed of flood hazards, the following flood information has been made available for public use.

If you are planning to build on flood hazard land, you must obtain a professional opinion on flood hazard boundaries from a building official or engineer. The City of Boston Conservation Commission must then be notified for permit requirements.

For more information concerning flood hazard zones, please contact the City of Boston Environment Department at (617) 727-3850.

Sincerely,

Lorraine M. Downey

Lorraine M. Downey, Director
City of Boston Environment Department

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Management

100 Cambridge Street
Boston
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02202
(617) 727-3267
Fax: 727-2630

**Division of
Resource Conservation**

National Flood Insurance Program
Reference File

The reference material in this file provides information about the National Flood Insurance Program (NFIP). Boston participates in the NFIP which means that property located in this municipality may be insurable against damage due to flooding.

In order for Boston to participate in this federally subsidized program, the community officials must require that construction and development in the 100-year floodplain comply with certain local, state, and federal standards. Refer to the enclosed Flood Insurance Rate Map (FIRM) to determine the extent of the 100-year floodplain in Boston.

The reference material provided generally relates either to information concerning the flood insurance program and coverage or information concerning construction techniques and regulations.

This public information resource has been provided to the Boston Public Library by the Flood Hazard Management Program of the Massachusetts Office of Water Resources within the Division of Resource Conservation. For more information concerning the NFIP or floodplain management, please contact the Office of Water Resources at (617) 727-3267.

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Reference Material

Reference #

1. Brochure which describes services provided by the Flood Hazard Management Program M3/WR/91.2

2. Flood Insurance Rate Map (FIRM) which illustrates the floodplain in this community US/FEMA/90.1

3. Flood Boundary and Floodway Map which illustrates the flood boundaries and floodway areas (for rivers) in this community
Received Map Index panel 21 and panel 21 which are on the same number as Ref. # 2.

4. Flood Insurance Study which provides historical data on flooding in this community and flood data to be used in conjuction with the FIRM and Floodway maps. FEM 1.209:250286/990

5. Guide to using the FIRM US/FEMA/86.1

6. Questions and Answers booklet about the National Flood Insurance Program (NFIP) US/FEMA/89.1

7. Flood: Are You Protected from the Next Disaster (brochure) FEM 1.202:F65/987

8. Retrofitting Flood-Prone Residential Structures (manual) FEM 1.208:R31

9. Coastal Construction Manual HH 1.6/3:R31/4/988

10. Purchase of Flood Damage Property Brochure FEM 1.2:F65/3/988

11. Section 2102.0 of the MA State Building Code, "Flood Resistant Construction" - Followings pages

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**Division of
Resource Conservation**

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Management

To order the following titles, send quantity requested and publication number to: **Federal Emergency Management Agency, P.O. Box 70274, Washington, D.C. 20024, Attn.: Publications (202) 646-2645**

FEMA-15 - Design Guidelines for Flood Damage Reduction

FEMA-54 - Elevated Residential Structures

FEMA-55 - Coastal Construction Manual

FEMA-85 - Manufactured Home Installation in Flood Hazard Areas

FEMA-102 - Floodproofing Non-Residential Structures

FEMA-114 - Design Manual for Retrofitting Flood-prone Residential Structures

FEMA-116 - Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials

FIA-2 - Questions and Answers on the National Flood Insurance Program

FIA-12 - Appeals, Revisions, and Amendments to Flood Insurance Maps: A Guidebook for Local Officials

FIA-13 - Flood Emergency and Residential Repair Handbook

To order the following items (in quantities of 200 or less), send form number, title and quantity to: **National Flood Insurance Program, Forms Order Unit, P.O. Box 499, Lanham, MD 20706 (1-800-638-6620)**

593-184E— NFIP Supplies Order Form (gives complete listing of publications available from this source)

593-114— Flood Insurance Application, Part 1 & Part 2

593-9046— Flood Insurance Application-Part 2 Worksheet

593-117— Elevation Certificate

593-9049— Floodproofing Certificate

593-227— Guide to Flood Insurance Rate Maps

For Flood Insurance Rate Maps, Flood Boundary and Floodway Maps and Flood Insurance Studies, call the Federal Map Distribution center in Lanham, MD, at 1-800-333-1363. In an emergency or short notice situation, contact the Massachusetts Division of Water Resources, Flood Hazard Management Program at (617) 727-2698 for maps.

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11.

SECTION 2102.0 FLOOD RESISTANT CONSTRUCTION

2102.1 Definitions: The following definitions shall apply only for Section 2102.0

1. "Lowest Floor": The lowest floor of the lowest enclosed area (including basement or cellar). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement or cellar area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this building code.

2. "Manufactured Home": A building transportable in one or more sections which is built on a permanent foundation when connected to the required utilities. The term "Manufactured Home" includes park trailers, travel trailers and other similar vehicles placed on a site for greater than 180 consecutive days.

3. "One-Hundred (100) Year Flood ": The flood having a one (1) percent chance of being equalled or exceeded in any given year. Also referred to as the "Base Flood".

4. "Start of Construction": The date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement, or other improvements was within 180 days of the permit date. The actual start means the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation or the placement of a manufactured home on a foundation.

5. "Breakaway Wall": A wall that is not part of the structural support of the building and intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.

6. "Substantial Improvements": Any repairs, reconstruction, or improvements, the cost of which exceeds fifty (50) percent of the market value of the structure before repairs of damages.

2102.2 Designated areas and projects: Plans for all structures and gas storage tanks, including new construction and substantial improvements to existing structures, and the placement of manufactured buildings and manufactured homes, shall be subject to review by the building official to determine if the location is within any areas of special flood hazards as designated by the Federal Insurance

Administration (FIA), through issuance of a Flood Hazard Boundary Map or through a scientific and engineering report entitled "Flood Insurance Study" with accompanying Flood Insurance Rate Maps and Flood Boundary and Floodway Maps. The building Official shall determine if the structure is within the one-hundred (100) year Floodplain area designated (as zones A, A1-30, AE, AH, AO, V1-30 or AE) on the community's flood hazard boundary map or flood insurance rate map published by FIA. If the structure is not located in a one-hundred (100) year flood zone as identified by FIA, and the building official has information indicating that the structure would be flooded during a one-hundred (100) year flood event, then the requirements of this section shall apply.

The one-hundred (100) year flood elevation shall be determined by the building official as follows:

(I) In A1-30, AH, AE, V1-30 and VE zones the one-hundred year flood elevation is provided on the community's Flood Insurance Study (FIS) and accompanying Flood Insurance Rate Map (FIRM).

(II) In AO zones add the depth provided on the Flood Insurance Rate Map to the highest adjacent grade. If no depth is provided add at least two (2) feet to the highest adjacent grade.

(III) In A and V zones the building official shall obtain, review and reasonably utilize any Base Flood Elevation Data available from a federal, state or other source.

2102.3 Structural Requirements in Floodplains: If a structure is to be constructed or substantially improved within flood zones (A, A1-30, AE, AO, AH), it shall be designed and constructed to minimize flood damage. Plans for such construction shall be submitted and certified by a registered professional engineer or architect to ensure that the following requirements are met:

1. The building is designed (or modified) and adequately anchored to prevent flotation, collapse or lateral movement

2. The building is constructed with materials and utility equipment resistant to flood damage.

3. The building is constructed by methods and practices that minimize flood damages;

4. Electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities are designed and/or located so as to prevent

water from entering or accumulating within the components during conditions of flooding;

5. New construction and substantial improvements of any residential structure shall have the lowest floor, including basement or cellar, elevated to or above the base flood elevation;

   Exception: If the addition complies with the National Flood Insurance Provisions (that is, if it is elevated to or above the base flood elevation), the existing structure need not be elevated. However, second story additions which rely upon the support of an existing structure not in compliance with this section are not eligible for this exception.

6. New construction and substantial improvements of any non-residential structure shall either have the lowest floor, including basement or cellar, elevated to or above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

   (I) Be floodproofed so that below the base flood elevation the structure is watertight with walls substantially impermeable to the passage of water; and

   (II) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

   (III) Be certified by a registered professional engineer or architect that the design plan specifications and methods of construction are in accordance with accepted standards of practice for meeting the provisions of this section.

7. Enclosure of space below the base flood elevation of all new construction and substantial improvements is permitted provided that the following conditions are met: (1) the space is used for parking of vehicles, building access or storage, (2) the space is not a basement or cellar and (3) the enclosure be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. Designs to meet this requirement must either be so certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

8. All manufactured homes must be elevated on permanent foundations such that the lowest floor of the manufactured home is above the one-hundred (100) year flood elevation and is securely anchored to resist flotation, collapse or lateral movement by providing over-the-top and frame ties to ground anchors in the following manner:

   a. Over-the-top ties shall be provided at each of the four corners of manufactured homes; with two (2) additional ties per side at intermediate locations for manufactured homes greater or equal to fifty (50) feet long, and one (1) additional tie per side for manufactured homes less than (50) feet long;

   b. Frame ties shall be provided at each corner of the manufactured home with five additional ties per side at intermediate locations for manufactured homes greater or equal to fifty (50) feet long and four additional ties per side for manufactured homes less than fifty (50) feet long;

   c. All components of the anchoring system be capable of carrying a force of four thousand eight hundred (4,800) pounds: and

   d. Any additions to the manufactured home shall be similarly anchored.

2102.4 Structural requirements in coastal high hazard areas: If a structure is to be constructed or substantially improved within a coastal high hazard area (land subject to high velocity waters, including hurricane wave wash identified as Zones V1-30 and VE on the community FIRM), as determined by the building official, the structural design specification and plans for such building shall be reviewed and certified by a registered professional engineer or architect that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the following provisions:

1. The structure is elevated on adequately anchored pilings or columns, and securely anchored to such piles or columns so that the lowest portion of the structural members of the lowest floor (excluding the pilings or columns) is elevated to or above the one-hundred (100) year level;

   Exception: If the addition complies with National Flood Insurance Provisions (that is, if it is elevated to or above the base flood elevation), the existing structure need not be elevated. However, second story additions which rely upon the support of an existing structure not in compliance with this section are not eligible for this exception.

2. The structure is securely anchored, as provided above, in order to withstand velocity waters and hurricane wave wash;

3. Fill is not used for structural support; and

4. The space below the lowest floor is either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice--work, or insect screening intended to collapse, under wind and water loads without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. The space below the base flood level must not be used for human habitation. Such enclosed space shall be usable solely for parking of vehicles, building access and storage. For the purposes of this section a breakaway wall shall be designed in accordance with the following conditions:

   (I) Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and,

   (II) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). Maximum wind and water loading values to be used in this determination shall each have a one percent chance of being equalled or exceeded in any given year (100 year mean recurrence interval).

5. New construction and substantial improvements of any residential structure shall have the lowest floor, including basement or cellar, elevated to or above the base flood elevation;

   Exception: If the addition complies with the National Flood Insurance Provisions (that is, if it is elevated to or above the base flood elevation), the existing structure need not be elevated. However, second story additions which rely upon the support of an existing structure not in compliance with this section are not eligible for this exception.

6. Electrical, heating, ventilation, plumbing, air conditioning and other service facilities are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

2102.5 Records: The building official shall obtain (or have the applicant provide) and maintain for public inspection a record of:

1. The as-built elevations, of the lowest floor, including basement or cellar, in relation to the national geodetic vertical datum. These elevations must be certified by a registered land surveyor or professional engineer;

2. The as-built elevations, in relation to the national geodetic vertical datum, to which a building has been floodproofed. These elevations must be certified by a registered land surveyor or professional engineer;

3. The date when such construction commenced.